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THE EXACT SOLUTION OF THE PLANE ELASTICITY SECOND BASIC PROBLEM FOR THE SYMMETRIC AIRFOIL CRACKS.

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Introduction.

The paper is the continuation of the paper [1], where the first and the mixed problems are solved. The singularity separation method is also used here, the boundary displacement being assumed to be differentable.

Analysis.

The elasticity second basic problem [2] for an unbounded domain D can be reduced to finding two functions analytic in $D\setminus\{\infty\}$:

$$f(z)=\Gamma z-\frac{X+iY}{2\pi(1+k)}\ln z+\frac{a}{z}+\ldots,\ g(z)=\Gamma' z+\frac{k(X-iY)}{2\pi(1+k)}\ln z+\frac{a'}{z}+\ldots, \quad (1)$$

Γ, Γ', $X+iY$ being known. The boundary condition is

$$\left\{kf(z)-z\overline{f'(z)}-\overline{g(z)}\right\}_{|z=z(t)}=2\mu(u(t)+iv(t)), \quad (2)$$

here $z=z(t)$, $t\in[0,1]$, is the equation of the boundary curve ∂D, $u'(t)$, $v'(t)$ are assumed to be of Holder class.

We transfer to the function $z(\zeta)$ which maps conformly $E^-=\{\zeta=$